Spallation Neutron Source   Acceptance Strategy

SNS
SPALLATION NEUTRON SOURCE

Page 1 of ___   WBS Number _____   (__) *opt. AS # within WBS*   QA Level __ (opt)   Rev. ___

Title   Wire scanner system _____

Description _____

_____

Originator _____ Lab _____
(originator may list his/her part of the total strategy and request others to add to the list, but the final version must be approved)

#	Expectation	Location	Responsibility	Verified by	Date
0	**Background information** The Wire Scanner system consists of four major components: a) The beamline devices: beam boxes, wire assembly, actuator, stepping motor, limit switches, feedthroughs, and LVDT (encoder for MEBT) b) Cabling c) Network attached devices (NAD) consisting of a PC and associated mounting hardware, analog and digital boards, link interface, power connection via RABBITS, auxiliary electronics (i.e. microstepping drive, analog module) and software (device drivers, LabVIEW VIs, dlls, channel access software, BIST software, gate array image, initialization file, etc). NAD has the following well-defined interfaces (as documented in the ICD): network, event link, RTDL, MPS, power, I/O. d) As-built documentation: mechanical drawings, schematics, block diagrams, PCB/BOM files, commented source code, gate array code, system configuration and initialization data, ICD, user manual, test procedures and software, troubleshooting guide, installation procedure, Test Reports/ QA records (Traveler), turn-on/set-up procedures, cable data, vendor-provided documentation. Notes on responsibility LANL has responsibility for the overall system design. Responsibility for the components is as follows: • MEBT actuator: BNL • MEBT beam boxes: LBNL • DTL/CCL Actuator and beam boxes: LANL • SCL Actuator and beam boxes: LANL with additional tests by Jlab • HEBT, Ring/RTBT Actuators and beam boxes: BNL/ LANL design • MEBT cables: LBL. DTL/CCL,SCL cables: LANL. HEBT/ring/RTBT cables: BNL. • Cable plant testing and verification: ORNL. • Electronics racks installation and preparation: ORNL. • RABBITS and network cabling: ORNL.				

	• User interface software: ORNL. • NADs, including LabVIEW VIs and client access software: MEBT electronics: LBNL. DTL/CCL/SCL electronics: LANL (includes content from LBNL). HEBT/ring/RTBT electronics: BNL. • Documentation: The partner lab responsible for each component provides as-built documentation for that component. System documentation (user manual, cabling data, etc) is provided by LANL as a first article and then maintained by ORNL on the project website and Oracle database. Cabling data including specification, length, termination, and routing. ORNL will provide barcode labels for major components.				
1	**Final design review(s) complete.** Final design documents are available on website along with Diagnostic Advisory Committee report/response. The following acceptance criteria are detailed in these documents: • Minimum and target performance requirements • Qualification test procedure: vertical integration tests that demonstrate potential to achieve target performance. • Component acceptance test procedures: tests of individual components that confirm minimum performance.	TBD	LANL	ORNL	
2	**Design Verification Tests** Vertical integration tests are performed on the bench at LANL and optionally, in parallel at ORNL. In addition, tests with beam are performed during MEBT commissioning at LBNL. Testing of individual components is also performed at the responsible labs. The SCL assembly will be tested at Jlab to assure that it meets cleaning and vacuum requirements. One ssembly will also be cycled to destruction to verify the lifetime. These tests use pre-production components and must demonstrate that the system design is fundamentally capable of achieving the target performance requirements.	LANL/ ORNL/ BNL/ LBNL/ JLab	LANL/ BNL/ LBNL/	ORNL	
3	**First Article Acceptance** Each first article component will be received and tested by the lab that designed it. The responsibilities are summarized in item 3, Design Verification. ORNL staff will participate in the tests at these labs and perform some tests in parallel at the RATS building. ORNL staff will participate in vendor visits. Actuator/Wire Assembly: Electrical performance of each Wire Assembly type will be measured. Visual, vibration analysis, vacuum integrity of the item is successfully verified based on the final, as built documentation.	LBNL LANL Jlab BNL ORNL	LANL BNL/ LBNL/	ORNL	

	Cable: Cable assemblies will be tested with the electronics. Layout of the racks will be confirmed by ORNL. NADS: First article NAD (including beta software) will be tested. The test environment includes simulated beam signals, final cable types, event/RTDL inputs, and channel access client software. Testing will be performed under simulated SNS physical environmental conditions, network traffic, event rates, and client loads. Seamless integration with the EPICS control system will be demonstrated. The interface to MPS will be tested This test is particularly critical for the wires in SCL. System must run for more than 10 days without intervention. Documentation: Final, as built documentation will be released.					
4	**Production Unit Acceptance** All production units*(not the MEBT units)* are received and acceptance tested at RATS by ORNL personnel. The only known exception is the SCL Wire Scanner assemblies that will be accepted at Jlab. All vendors' warranties are transferred to ORNL. Partner lab personnel will be available for consulting and will maintain test facilities at their site. If required, the responsible partner lab will repair units that fail acceptance tests. Test and repair can take place at RATS or at the partner lab. The handoff will be declared complete when the last article passes acceptance tests at ORNL. Actuator/Wire Assembly: SCL Actuator/Wire Assembly accepted at Jlab. All other *(not MEBT)* Actuator/Wire Assembly accepted at RATS as part of an integrated assembly. If required, ORNL staff will attach wires in RATS, or for the SCL scanners, in a clean area. Cables: Accepted from vendor at RATS. NADs: Accepted at RATS. 48 hours of successful burn-in where applicable. Documentation: After the first article acceptance, ORNL staff will revise documentation to match accepted components. Partner lab staff will consult in this process.	ORNL JLab	ORNL		LBNL LANL JLab BNL	

Spallation Neutron Source

Acceptance Strategy

Role	Name *(originator may suggest approvers)*	Plan Approval Signature	Date
SNS Division	Saeed Assadi	*[signature]*	11-9-01
	Tom Shea	*[signature]*	11-9-01
	Norbert Holtkamp	*[signature]*	11-9-01
	Mike Plum, Diagnostics WPM	*M.A. Plum*	4/Nov/01
	Mark Gardner, QA Representative	*[signature]*	11/06/01
	Will Fox, Project Office	*[signature]*	11/06/01
	Don Rej, Division Director	*[signature]*	11/6/01
Systems Integration			
SNS ES&H			
SNS QA			

Items/System Accepted at SNS

Installation Manager or designee	Printed Name	Signature	Date: